The Role of Education and Public Outreach in the Mars Scout Program

Presented at the Mars Scout Pre-proposal Conference

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NASA Education Goals
(from NASA 2003 Strategic Plan)

- ***Inspire and motivate students to pursue careers in science, technology, engineering, and mathematics.***
- ***Engage the public in shaping and sharing the experience of exploration and discovery.***

Space Science EPO addresses these goals through a portfolio of activities involving many types of partners and carried out in many types of communities across the country.

Space Science EPO Program Portfolio

- Space Science EPO is primarily embedded in Mission and Research Programs selected through open competitive processes
  - Missions (Required to have EPO)
  - Science Research Awards (Option to add EPO)
- Minority University and College Education and Research Partnerships
- High Leverage Projects (Origins PBS series,…)
- Small, Innovative, Experimental Programs

Environmental Changes

Scale of Space Science EPO has dramatically increased since inception:

1997 -- 3 Missions and EPO leads; IDEAS small grants (~15); few products (10's)

2005 -- over 100 Missions, programs, and EPO leads; IDEAS, ROSS, GI small grants programs (~150); > 300 products

Space Science Education and Public Outreach - Operating Principals

- The E/PO Program is centered on unique science and technology and the direct participation of the space science community
- The program is focused on addressing the needs of the education community (both formal and informal) as defined by that community
- The program is based on the development of partnerships with the education community from the beginning and on pursuing the most promising high leverage opportunities
- Activities have been designed to provide unique teaching tools to educators, unique educational experiences for students, and engage the public in the experience of exploration and the discoveries from missions and research programs
    - The focus on precollege is explicitly intended to interest more students in STEM subjects and careers
- Diversity considerations are built in to all aspects of E/PO programs
- Multiple mechanisms are used to assess and evaluate programs

Mars Scout Program
Proposal Preparation

SMD Education and Public Outreach
What Are We Looking For In Proposals?

- A statement that the PI understands the requirements of the SMD E/PO program and is committed to carrying out a program that meets the SMD E/PO goals.
- Identification of unique characteristics of the mission that would be utilized in the E/PO program.
- An overview of the planned E/PO activities
  - Identification of target audiences and areas of emphasis/activities in formal, informal and public outreach.
  - Understanding of the role that program evaluation plays in E/PO.
  - A commitment to adequately fund the proposed E/PO program

[Mars Scout Program Guideline: .25-.50% of the total mission cost through all phases excluding launch vehicles.]

SMD Education and Public Outreach

– Detailed plans for implementing the base E/PO activities, including identification of and formal commitment from E/PO partner institutions, will be part of the Phase A Concept Study and will be evaluated as part of the confirmation process.

Student Collaborations

- Principal Investigators are encouraged to propose innovative ways to directly involve students in their prospective missions.
  - Proposers may define a Student Collaboration (SC) that may involve development of an instrument, investigation of scientific questions,analysis and display of data, development of supporting hardware or software, and/or other aspects of the mission.
  - Student Collaboration proposals are encouraged and will be considered strengths.
  - SC proposals, if any, will be evaluated for overall merit and will not be penalized for any inherent higher cost, schedule or technical risk, as long as the SC is shown to be clearly separable from the primary objectives.

Student Collaborations

- The proposer must -
  - clearly identify proposed SC as an E/PO element
  - clearly identify the development schedule of the SC and describe how it can be developed so as to be separable from the proposed baseline science investigation and performance floor science investigation. Review and decision points for determining the SC readiness for flight must be identified.
- Although the cost of the SC must be included under the NASA cost cap, the cost of the SC must be identified separately from the proposed investigation. If NASA selects the proposed mission, NASA may or may not fund the SC.

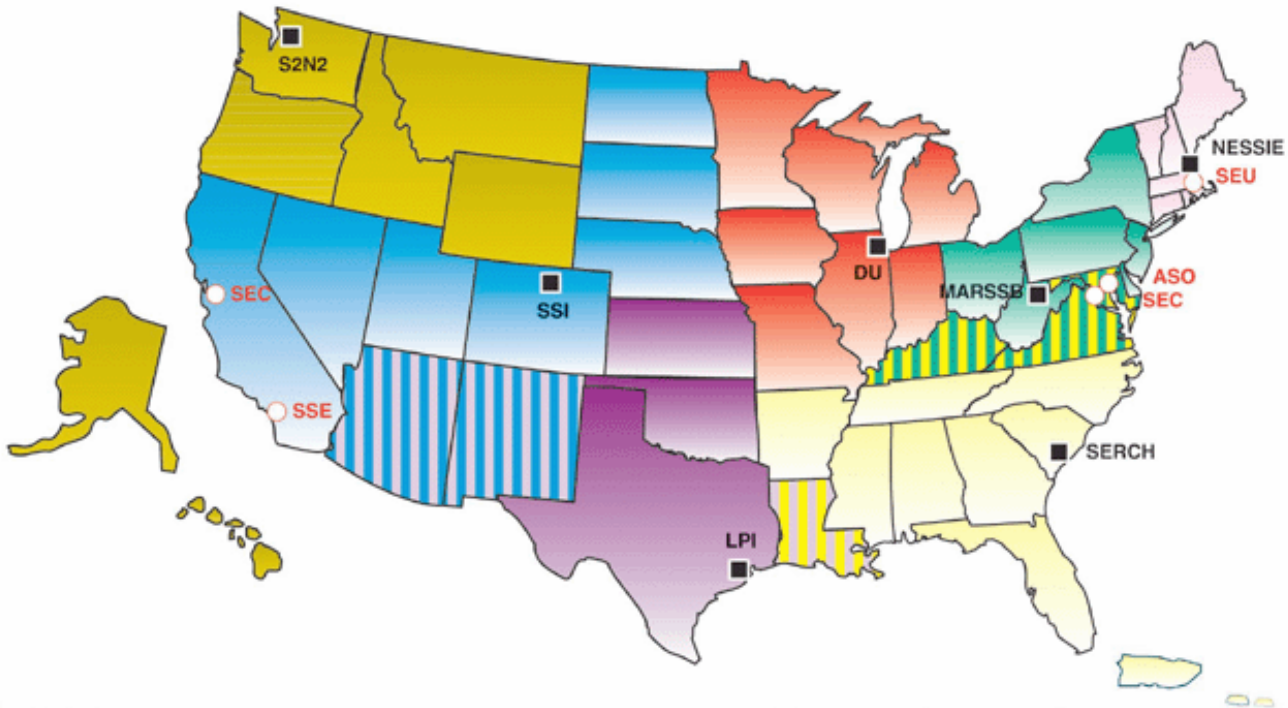
SMD Education and Public Outreach Information Sources for Proposal Preparation

- Explanatory Guide for the Education/Public Outreach Evaluation Criteria (Version 3.0 March 2004)
  - Describes in great detail what the Evaluation Criteria mean
  - Contains answers to "Frequently Asked Questions"
  - Was developed to ensure that E/PO efforts are prepared and evaluated on a consistent basis.
- Education and Public Outreach Annual Reports
- E/PO Newsletters
- Support Network (Education Forums and Brokers)

SMD Education and Public Outreach Sources of Assistance

- Contact a Broker/Facilitator or Space Science Education Forum
  - The Support Network is there to help, but is not responsible for preparing the EPO portion of your Investigation
- In accord with the operating principles developed by the Support Network, discussions with individual Teams developing proposals will be treated as proprietary
- Contact information is available through the SMD E/PO Homepage [http://science.hq.nasa.gov/research/epo.htm]
- Questions about the SMD E/PO Program may be directed to the SMD E/PO Program Office.

Space Science EPO Support Network



○ FORUMS

Astronomical Search for Origins and Planetary Systems (ASO)

Structure and Evolution of the Universe (SEU)

Solar System Exploration (SSE)

Sun-Earth Connection (SEC) (East Coast)

Sun-Earth Connection (SEC) (West Coast)

■ BROKER/FACILITATORS

DePaul University (DU)

Lunar and Planetary Institute (LPI)

Mid-Atlantic Region Space Science Broker (MARSSB)

New England Space Science Initiative in Education (NESSIE)

SouthEast Regional ClearingHouse (SERCH)

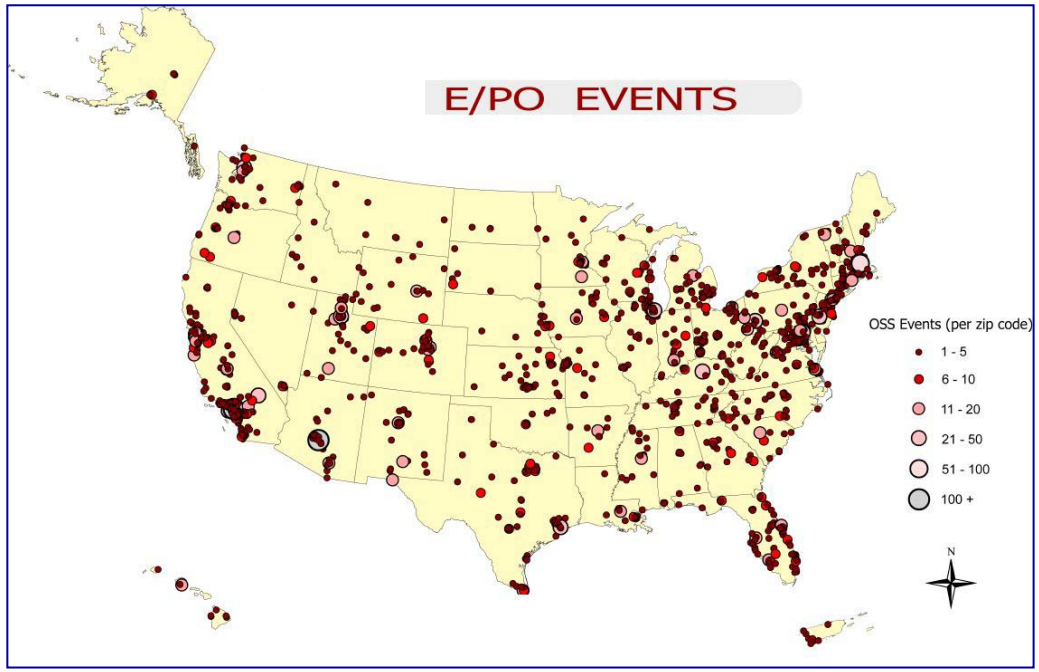
Space Science Institute (SSI)

Space Science Network Northwest (S2N2)

Backup Charts

Extent of FY 2004 Space Science EPO Program

- Over 500 E&PO activities and new products.
- Over 5,000 discrete EPO events.
- Presence in all 50 states, DC, PR, and VI.
- Presence at over 30 national and 70 regional EPO conferences.



Estimated participants:

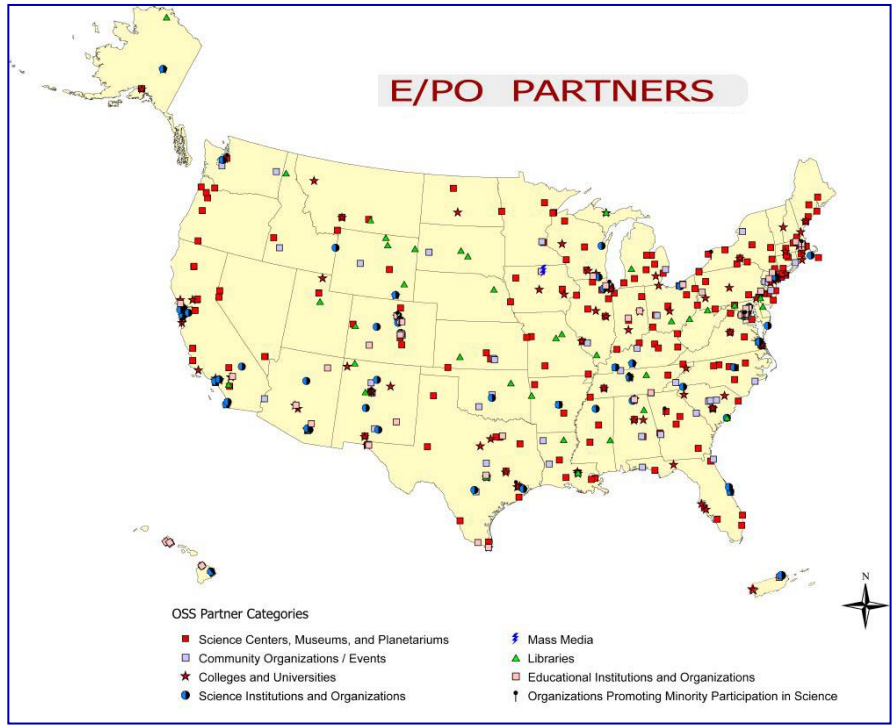
• Over 400,000 direct participants in workshops, community and school visits, and other interactive special events.

• Over 7 million Internet participants for web casts, web chats, and other web events.

• Potential audience of over 200 million for lectures, planetarium shows, museum exhibitions, conference exhibits, radio, television, and other forms of public media.

Contributors to FY 2004 Space Science EPO Program

- Over 115 Missions and Programs.
- Nearly 1,300 scientists, technologists, and support staff.
- More than 600 institutional partners, including:
  - ~ 200 science centers, museums, and planetariums.

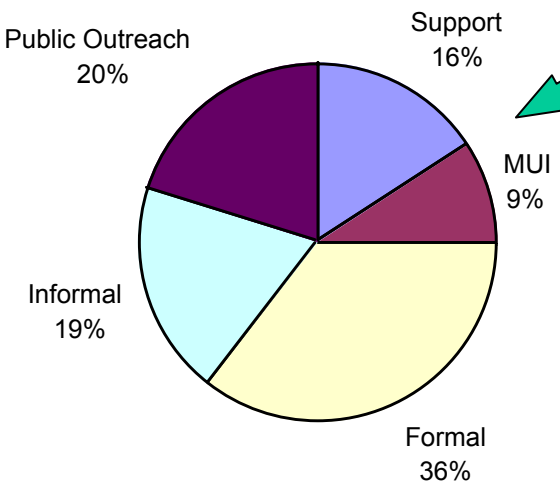


~ 300 science institutions and organizations, colleges and universities (including 40 minority institutions).

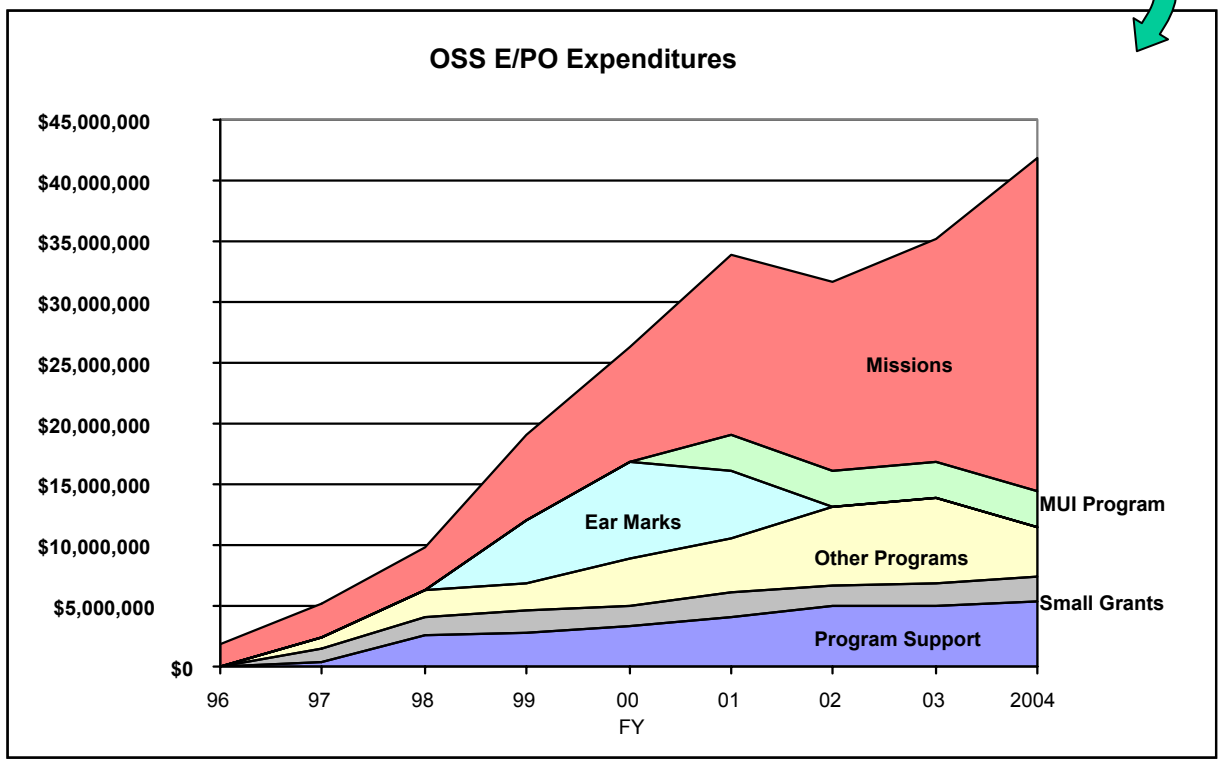
- 10 professional societies of minority scientists and organizations promoting minority participation in science.
- Nearly 100 libraries, community, and other organizations.

Education and Public Outreach Budget History and Allocations

Funding Allocations (FY 2004–$43M total)

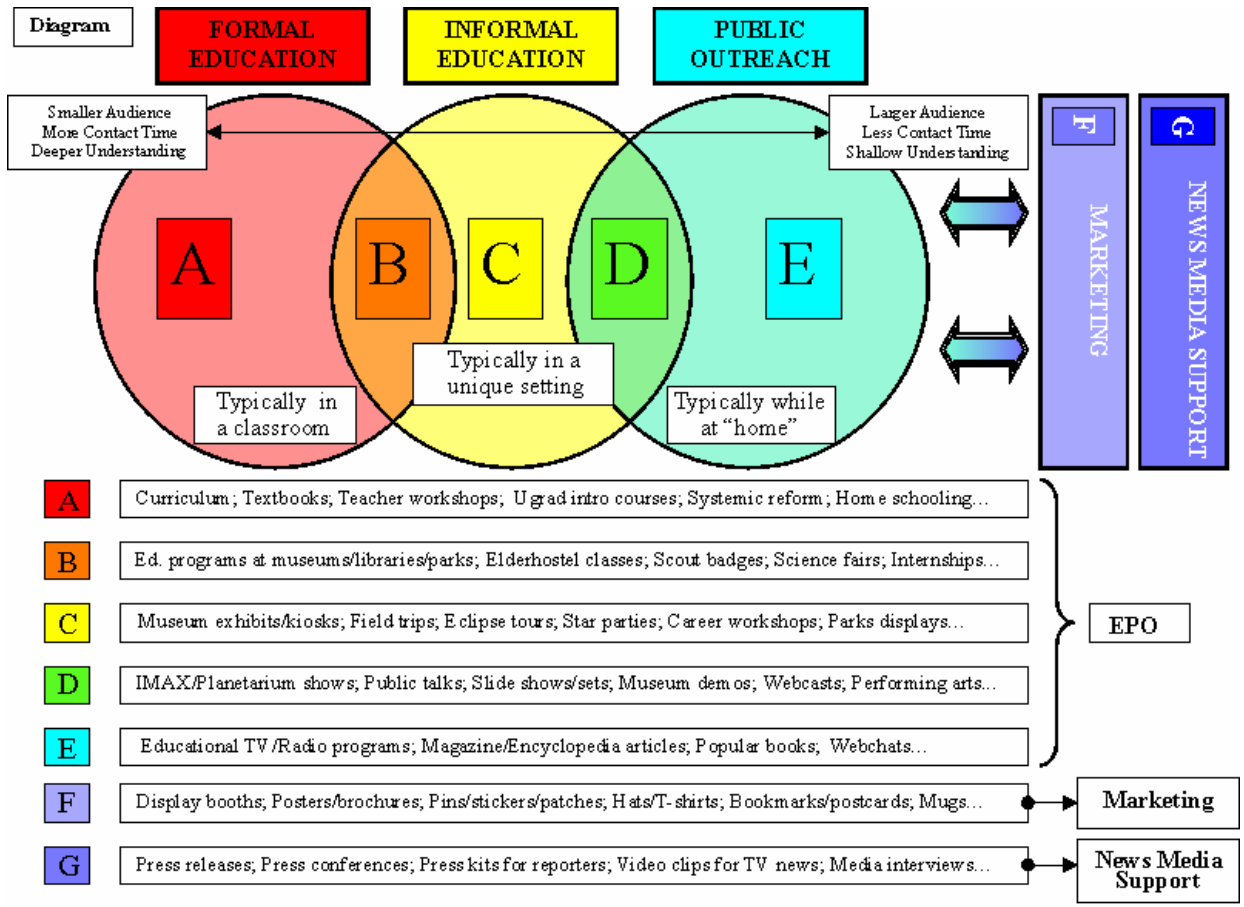


Funding History/Projections (FY 1996-2004)



The program also draws upon significant resources from outside of NASA.

SMD Education and Public Outreach: Some Important Definitions



SMD Education and Public Outreach
Some Summary Observations

- SMD is serious about education and public outreach
  - A major national program is now underway
- EPO will be an integral element of the Discovery evaluation and selection process -- EPO has made a difference in previous AO selections
- We have seen a significant evolution in the level of maturity, ambition, and sophistication in mission EPO programs over the past several years
  - We have high expectations for Discovery EPO.
- Resources are available to help the PI's in developing their proposals
  - Contact the Forums and Broker/Facilitators for help
  - Read the "Explanatory Guide" and other available documentation
- Treat EPO with the same rigor and professionalism that you'll treat the science and engineering aspects of the Concept Study Report. [Your EPO lead is the "systems engineer" for EPO.]
- Provide adequate reserves in EPO -- the unexpected happens in EPO too!

How does the SMD E/PO program relate to the broader NASA Education Program?

There is one NASA Education program.

- AA for Education is held accountable by the Administrator for the effectiveness of the entire agency education portfolio
- Management of various programs is vested in several organizations including the Office of Education, NASA Directorates (such as the Science Mission Directorate), and the NASA Field Centers.
  - SMD E/PO is aligned with NASA policies and guidelines, evaluation and reporting for education programs.